

Figure 1
AUS000111US1

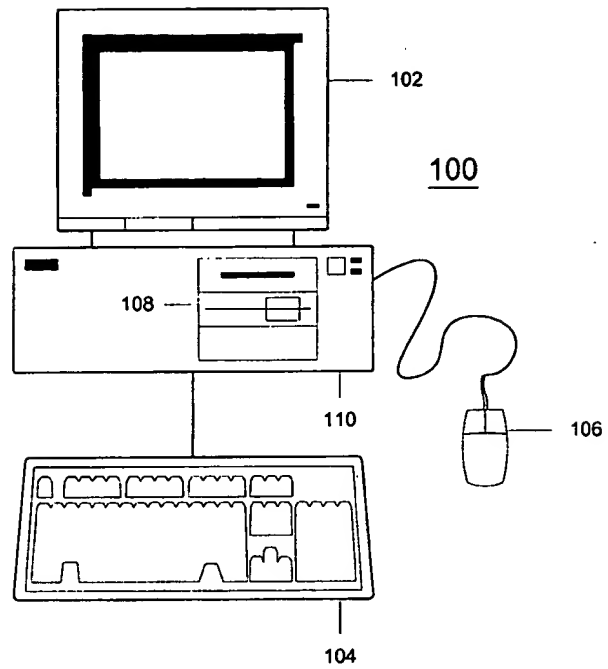
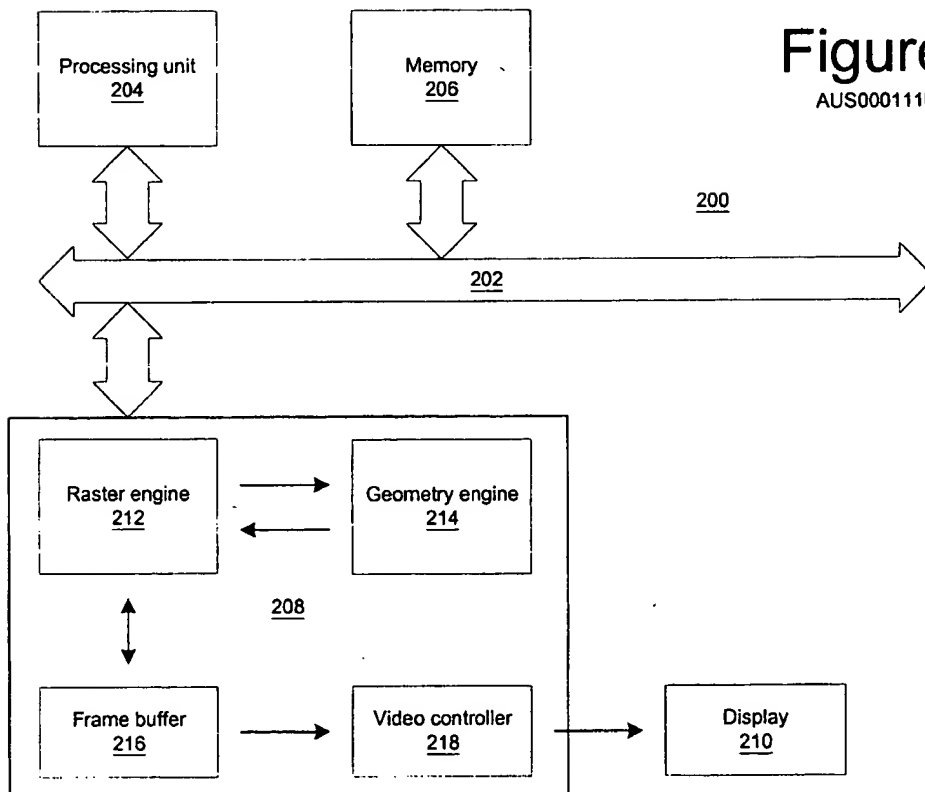
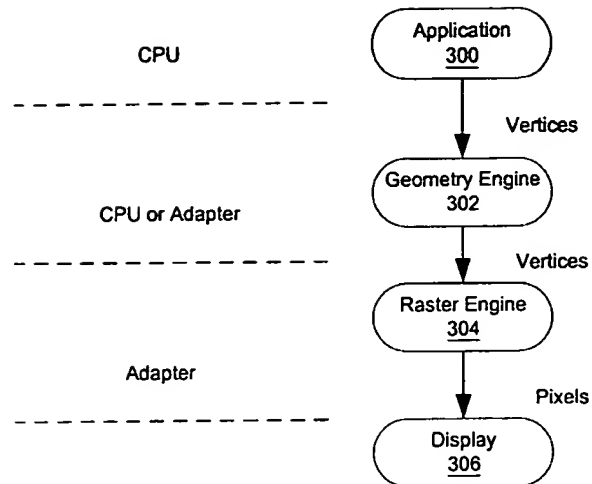


Figure 2
AUS000111US1



AUS000111US1



AUS000111US1

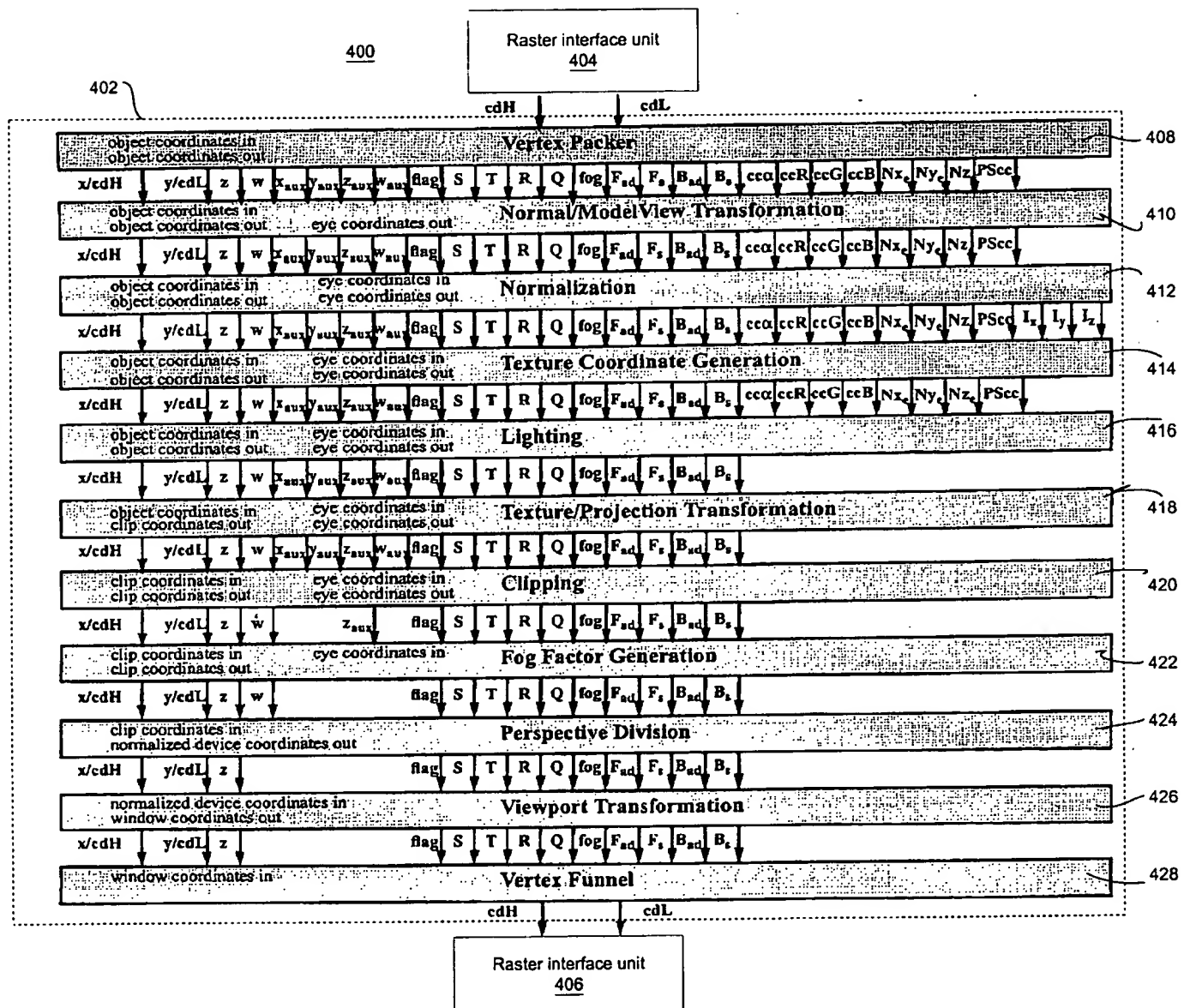


Figure 5

AUS000111US1

Vertex Fragment Descriptions

| Fragment <u>502</u> | as used in Geometry <u>504</u> | as used in Raster <u>506</u> |
|---|--|--|
| x, y, z, w | primary coordinate ¹ | screen coordinate |
| xAux, yAux, zAux, wAux | eye coordinate ² | n/a |
| s, t, r, q | texture coordinate | texture coordinate |
| fog | fog factor | fog factor |
| f _{ad} , f _s | n/a | front ambient/diffuse color, front specular color |
| b _{ad} , b _s | n/a | back ambient/diffuse color, back specular color |
| cc _a , cc _r , cc _g , cc _b | current color (alpha, red, green, blue) | n/a |
| n _x , n _y , n _z | normal vector | n/a |
| PSc | secondary current color (packed alpha, red, green, blue) | n/a |
| i _x , i _y , i _z | normalized eye coordinate ³ | n/a |

1. Based on the location of the vertex within the geometry pipeline, the primary coordinate is either an object, clip, normalized device, or screen coordinate. See Figure 2.
2. Several stages in the geometry pipeline require both primary and auxiliary (eye) coordinates.
3. The normalized eye coordinate is generated by the normalization unit and is only useful to the texture coordinate generation unit.

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Figure 6

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Fragments Affected Per Stage

600

| Stage 602 | Fragments Affected 604 | Associated Command 606 |
|-----------------------------------|---|---------------------------------------|
| Normal/ModelView Transformation | $x_{Aux}, y_{Aux}, z_{Aux}, w_{Aux}$ n_x, n_y, n_z | ENABLE_NORMALXF ENABLE_MDLVW XF |
| Normalization | n_x, n_y, n_z i_x, i_y, i_z | ENABLE_NORMALIZEN ENABLE_TCGSPHERE |
| Texture Coordinate Generation | s, t, r, q | ENABLE_TCG |
| Lighting | f_{ad}, f_s, b_{ad}, b_s | |
| Texture/Projection Transformation | x, y, z, w s, t, r, q | ENABLE_TEXTUREXF ENABLE_PROJECTXF |
| Clipping | all | ENABLE_CLIPPING |
| Fog Factor Generation | fog | ENALBE_FOG |
| Perspective Division | x, y, z s, t, r, q | ENABLE_PERSDIV ENABLE_TEXPERSDIV |
| Viewport Transformation | x, y, z | ENABLE_VIEWPORTXF |

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Figure 7

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Fragments Required Per Stage

700

| Stage 702 | Fragments Required 704 |
|-----------------------------------|---|
| Normal/ModelView Transformation | x, y, z, w, n _x , n _y , n _z |
| Normalization | xAux, yAux, zAux, wAux, n _x , n _y , n _z |
| Texture Coordinate Generation | x, y, z, w, xAux, yAux, zAux, wAux, i _x , i _y , i _z |
| Lighting | n _x , n _y , n _z cc _a , cc _r , cc _g , cc _b PSc _c , f _{ad} , f _s , b _{ad} , b _s |
| Texture/Projection Transformation | xAux, yAux, zAux, wAux, s, t, r, q |
| Clipping | all |
| Fog Factor Generation | zAux |
| Perspective Division | x, y, z, w, s, t, r, q |
| Viewport Transformation | x, y, z |

Figure 8

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| Signal 802 | No transfer 804 | No transfer 806 | Command 808 | Data 810 | Vertex 812 |
|-------------------------|------------------------------|------------------------------|--------------------------|-----------------------|-------------------------|
| valid | 0 | x | 1 | 1 | 1 |
| ready | x | 0 | 1 | 1 | 1 |
| cmdBit | x | x | 1 | 0 | x |
| cdSelect ¹ | x | x | 1 | 1 | 0 |

800

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Figure 9A

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900

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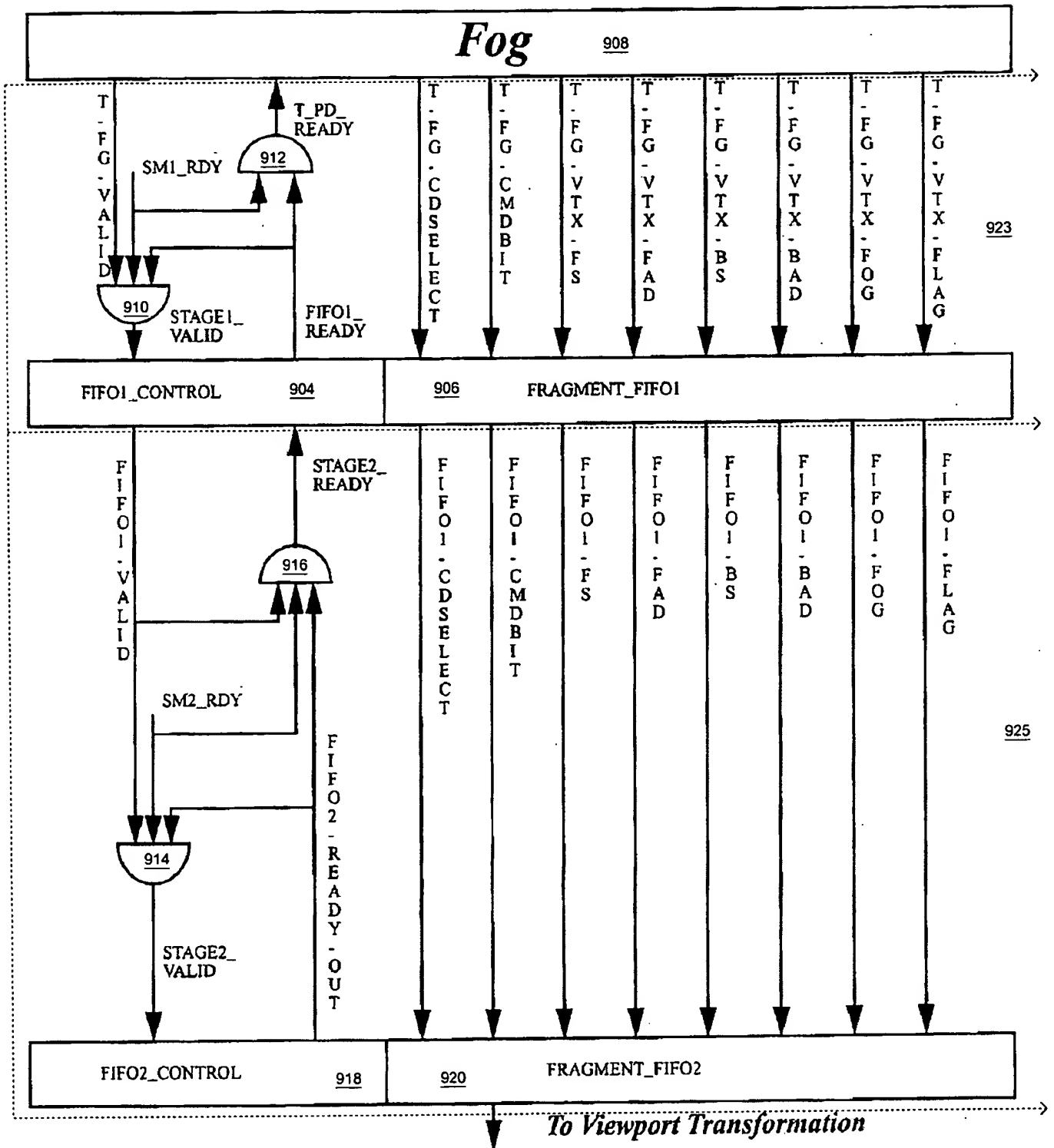
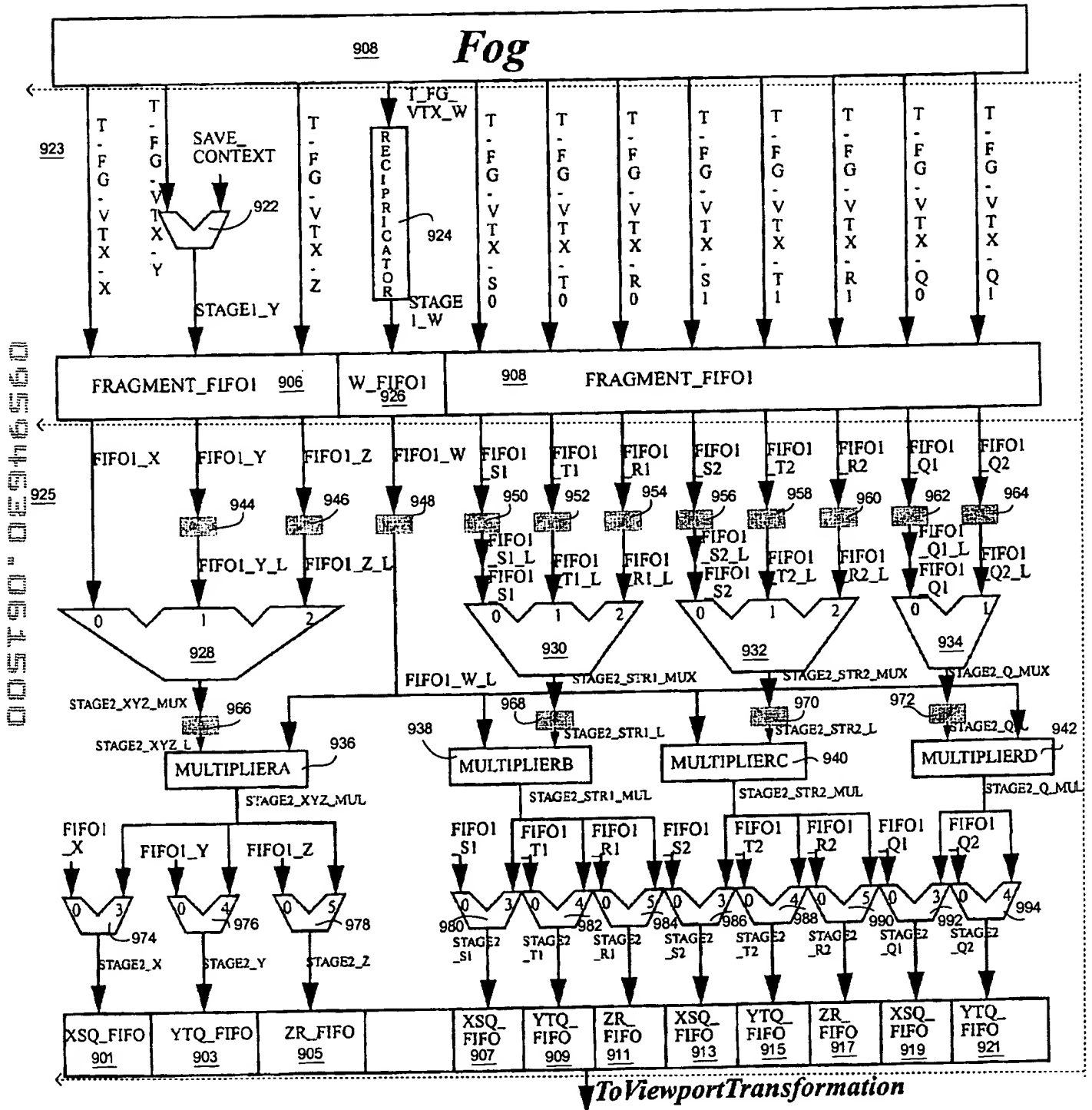


Figure 9B

AUS000111US1

902



| | | | | | | | | | | | | |
|---------------------|-----|-----|-----|---|------|------|------|------|------|------|------|-----|
| Incoming Coordinate | X | Y | Z | W | S0 | T0 | R0 | Q0 | S1 | T1 | R1 | Q1 |
| Outgoing Coordinate | X/W | Y/W | Z/W | | S0/W | T0/W | R0/W | Q0/W | S1/W | T1/W | R1/W | Q1/ |

Figure 10

AUS000111US1

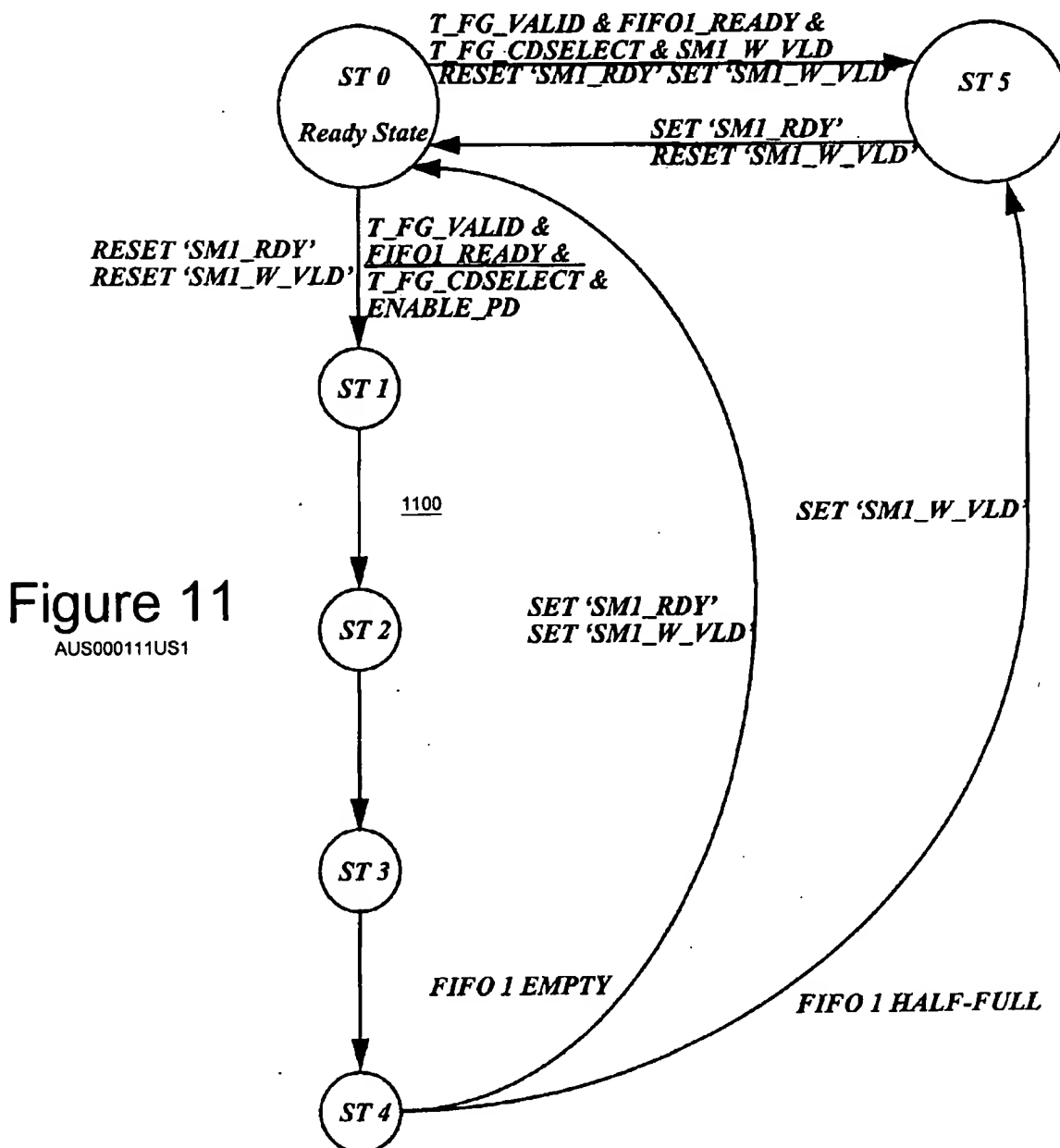
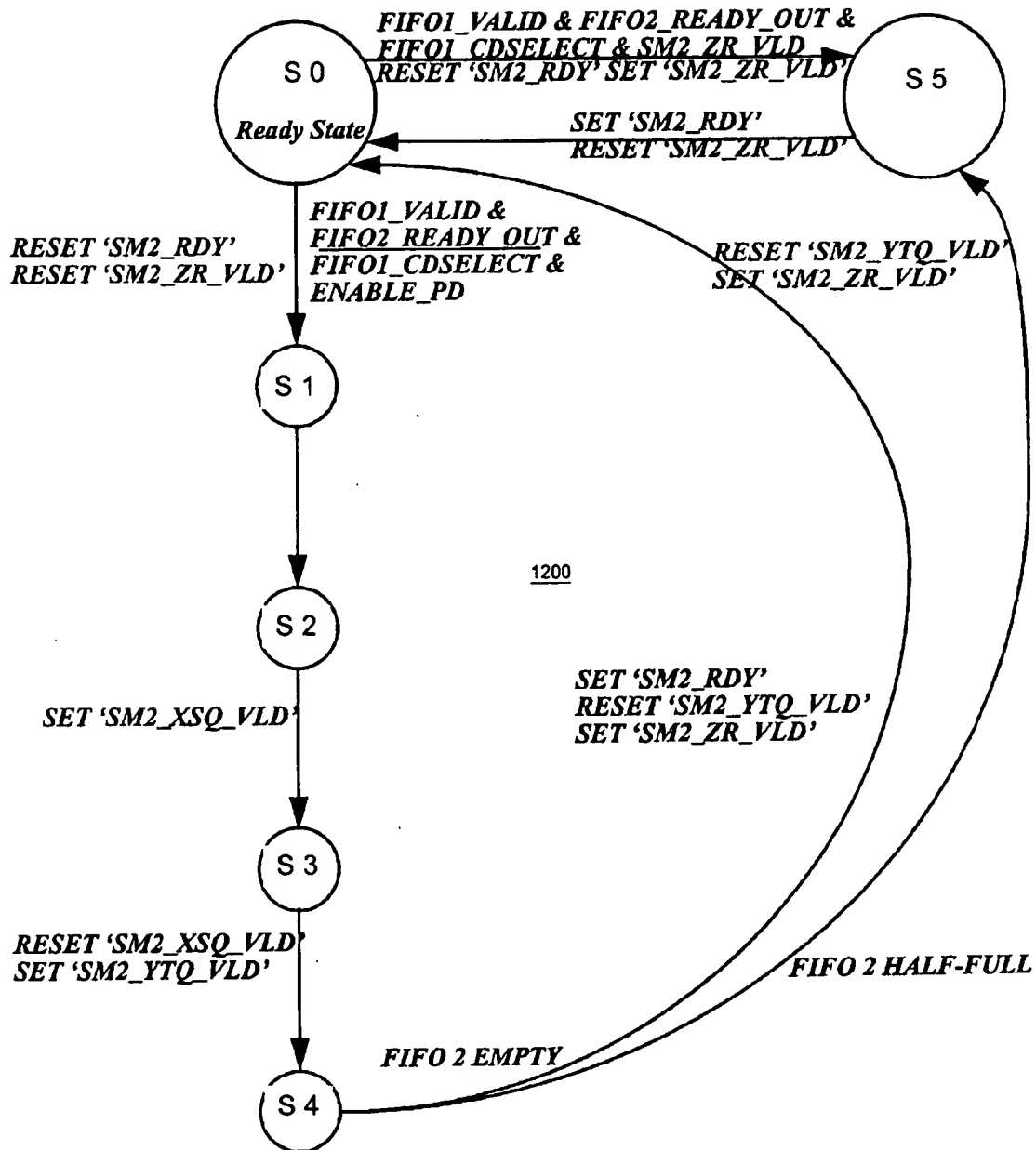


Figure 12

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Figure 13

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| Clock | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---------|-------|---|---|---|---|-------|---|------|------|------|-------|---|
| I/W | W_1 | | | | | W_2 | | | | | W_3 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Fifo I | | | | | | I/W | | | | | I/W | |
| Mul A | | | | | | | | X/W | Y/W | Z/W | | |
| | | | | | | | | | X/W | Y/W | Z/W | |
| Mul B | | | | | | | | S1/W | T1/W | R1/W | | |
| | | | | | | | | | S1/W | T1/W | R1/W | |
| Mul C | | | | | | | | S2/W | T2/W | R2/W | | |
| | | | | | | | | | S2/W | T2/W | R2/W | |
| Mul D | | | | | | | | Q1/W | Q2/W | | | |
| | | | | | | | | | Q1/W | Q2/W | | |
| Fifo II | | | | | | | | | | | | X/W Y/W Z/W S1/W T1/W R1/W Q1/W S2/W T2/W R2/W Q2/W |

1302

1300

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